Bessemer converters), and H. H. Campbell remarks as to the acid open-hearth process (p. 14) : —

"... Whenever iron ore is not added to the bath . . . it may be necessary for the slag to have more oxide of iron, and there is no place for this to come from except the bath. Therefore, when there is need of oxide of iron, the iron of the bath unites with the oxygen of the flame and goes into the siag. Therefore it is clear that if no iron ore is used, a certain equivalent amount of stock must be oxidised, and that if iron ore is used, the weight of the metal tapped will be greater than if it had not been added."

The same author explains the action of ore additions in the following manner : (p. 13) " If iron ore is added, this is the easiest way for the slag to get the oxide, since it simply appropriates it to its own use." (The peroxide ore is referred to.) He continues . . . " If the slag contains too high a percentage of silica and needs more iron oxide, and if under these conditions iron ore is added, then only one of these atoms of oxygen goes towards oxidising the silicon and carbon of the bath . . . and the rest of the oxide stays with the slag, and (the operation) may be expressed by the following simple chemical formula : —

This sort of mode of action of the ore additions has for a long time been regarded as the only one possible ; it caused (since the entire FeO remained in the slag) the employment of ores in basic open-hearth furnaces also to appear as direct extravagance in valuable materials which could be utilised in the blasfc furnace with great advantage.

On this ground, one deemed the assistance of the oxidising action of the flame by means of iron ore additions as a necessary evil, and sought to suitably reduce it to the smallest possible extent. Later, one learnt, of course, that the utilisation nevertheless can be larger under the circumstances than would be stipulated through the course of the reactions according to the above equation, but as to the actual extent of the same, nevertheless, scarcely precise statements are placed before one. In his "Eisenhuttenkunde," 1908, Vol. III.,